

All Things Wetland Plants

Episode 5: Dichotomous Keys

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rior ovary, and a two-lobed stigma. The flowers bloom individually from a main trailing stem. The leaves are shaped like an arrowhead; the two basal leaf lobes flare out perpendicular to the leaf axis, a condition known as *hastate*. This species differs from native morning glories (*Calystegia*) in its bracts, which occur down the stem, well below the small fused sepals.

DOGWOOD FAMILY (CORNACEAE)

This small, diverse, mostly northern temperate family has opposite, simple leaves, flower parts in fours, and an inferior ovary. Dogwoods are California's only representative, with five species.

Creek dogwood (*Cornus sericea* ssp. *sericea*)

- 4 to 10 feet
- early to mid-season
- moist stream, lake edges

Creek dogwood is common into the subalpine zone, where it may grow in dense, shrubby thickets. The stems are dark red to purple. The ovate to elliptic leaves have four to seven pairs of slightly offset, distinct veins that circle out from the main leaf axis. The small flowers form a flat-topped inflorescence. The many grayish blue berries are edible though not particu-

lar. The most common west-

ern dogwood (*Cornus sericea* ssp. *occidentalis*) occurs at low elevations in the southwest Basin. It differs in its larger petals (3 to 4.5 mm, long) and rough-hairy leaf under-surface. The showy foothill species, mountain dogwood (*C. nuttallii*), does not occur in Tahoe. *Cornus* is Latin for horn, a reference to the plants' hard wood.

STONECROP FAMILY (CRASSULACEAE)

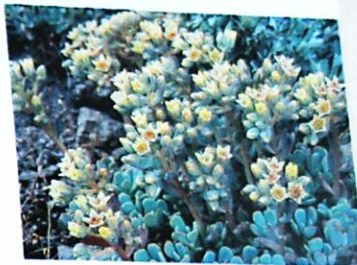
This well distributed family occurs in dry temperate regions of the world, especially South Africa. The family is characterized by fleshy, succulent leaves and often colorful flowers. Of California's four native genera, only *Sedum* is present in Tahoe. Stonecrops utilize the Crassulacean Acid Metabolism (CAM) process to flourish in Tahoe's summer-drought climate. Plants open their stomata and take in carbon dioxide at night when moisture stress is low. As temperatures rise the following day, they close their stomata to minimize moisture loss, but are able to continue photosynthesizing by utilizing carbon dioxide stored the night before.

PLANT DESCRIPTIONS

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Creek dogwood



Sierra stonecrop



Lance-leaf stonecrop

Lance-leaf stonecrop (*Sedum lanceolatum*)

- 2 to 8 inches
- mid-season
- open volcanic ridges, slopes

This brightly flowered species occurs on dry, subalpine volcanic slopes and plateaus in the far north and south Basin. It has many linear to ovate, often reddish basal leaves and similar stem leaves, which tend to fall off the stem by flowering time. The flowers have

fully opened, lanceolate petals, each with a reddish midrib. The similar narrow-petaled stonecrop (*Sedum stenopetalum*) is uncommon on semi-moist rocky soils, ledges, and crevices from mid elevations to 9,000 feet, mostly in the southwest Basin. It differs in its habitat preference, more branching inflorescence, and lanceolate stem leaves that become thin and papery like an onion skin before falling off the stem.

Sierra stonecrop (*Sedum obtusatum* ssp. *obtusatum*)

- 1 to 8 inches
- mid-season
- rocky, sandy ledges

Sierra stonecrop is common in granitic landscapes up to 9,000 feet. The crowded, blue-green to reddish purple basal leaves are round with a slight notch at the tip, while the more widely spaced stem leaves are obtuse. The five

Field guides contain brief descriptions and photographs of the most common species in an area. They are not dichotomous keys.

Plants of the Tahoe Basin: Flowering Plants, Trees and Ferns, by Michael Graf is one example.

SUMMER KEYS TO TREES

In some instances, a portion of the species in a genus will key out separately from the others, thus a genus may appear more than once in a key. The key to conifers, in summer or winter, is included here. *Franklinia alatamaha* is considered extinct in the wild, so it is omitted from the keys.

- 1 Leaves needle-like, scale-like, or awl-shaped group A (conifers)
- 1 Leaves not needle-like, scale-like, or awl-shaped; seed enclosed in an ovary
. 2 (flowering plants)
- 2 Leaves very large, to 4–7 ft. long, fan-like, stem unbranched.
. *Sabal palmetto*, p. 84
- 2 Leaves less than 4 ft. long, stems branched 3
- 3 Leaves simple 4
- 4 Leaves opposite or whorled group B, p. 30
- 4 Leaves alternate group C, p. 31
- 3 Leaves compound group D, p. 37

Four couplets in:

Native Trees of the Southeast: an Identification Guide

By
**L. Katherine Kirkman,
Claud L. Brown,
and
Donald J. Leopold**

Group C. Monocots; herbaceous plants with parallel-veined leaves and sepals mostly in 3's or 6's or lacking (some Dicot families will have 3-merous flowers but the leaves will not have parallel veins, others will have parallel veins but not 3-merous flowers)

1. Flowers unisexual, borne in dense clusters . . . . .	.2
1. Flowers bisexual, often not densely clustered . . . . .	.3
2. Stems mostly 3-sided; each flower subtended by 1 (rarely 2), apparent scale-like bract (sedges)	Cyperaceae(p.603)
2. Stems round in cross section; flower bracts minute and inconspicuous	Typhaceae (p.601)
3. Stamens and ovaries enclosed by 1 or 2 bracts, scales or sacs; petals and sepals lacking (grasses and sedges) . . . . .	.4
3. Flowers with 3(4) or 6 petals and/or sepals . . . . .	.5
4. Stems mostly solid and 3-sided; each flower subtended by 1 (rarely 2) scale-like bract (sedges)	Cyperaceae (p.603)
4. Stems mostly round in cross-section and swollen at the leaf nodes; each flower enclosed by 2 bracts (grasses)	Poaceae (p.645)
5. Ovary inferior . . . . .	.6
5. Ovary superior . . . . .	.9
6. Small leafless plants parasitic on conifers	Viscaceae (dicot) (p.343)
6. Plants green, leafy and rooted in the soil . . . . .	.7
7. Leaves whorled (≥ 2 per node) at least below	Rubiaceae (dicot) (p.468)
7. Leaves 1 or 2 per node . . . . .	.8
8. Flowers bilaterally symmetrical; i.e., 1 petal different than the other 2	Orchidaceae (p.734)
8. Flowers radially symmetrical; all petals identical	Iridaceae (p.731)
9. Cauline leaves with main veins branching off of the midvein	Polygonaceae (dicot) (p.149)
9. Leaves with parallel veins . . . . .	.10
10. Flowers sessile, borne on a spike . . . . .	.11
10. Flowers pedicellate or pedunculate; inflorescence a panicle, raceme, or solitary . . . . .	.13
11. Spike <5 mm in diameter	Juncaginaceae (p.585)
11. Spike ≥ 8 mm in diameter . . . . .	.12.
12. Tepals 6; leaves linear, grass-like	Acoraceae (p.591)
12. Tepals 4; leaf blades elliptic to obovate	Araceae (p.591)
13. Fruit a berry . . . . .	.14
13. Fruit a capsule or a circular cluster of follicles . . . . .	.16
14. Vines	Smilacaceae (p.732)
14. Plants erect, not vining . . . . .	.15
15. Leaves narrow, scale-like; flowers 1 or 2 from leaf axils	Asparagaceae (p.717)
15. Leaves not scale-like; inflorescence usually terminal	Liliaceae (p.717)
16. Fruit a circular cluster of follicles . . . . .	.17
16. Fruit a capsule . . . . .	.18

Example of a parallel key to plant families in

Manual of Montana Vascular Plants

by
Peter Lesica

with contributions from

Matt Levin

and

Peter F. Stickney

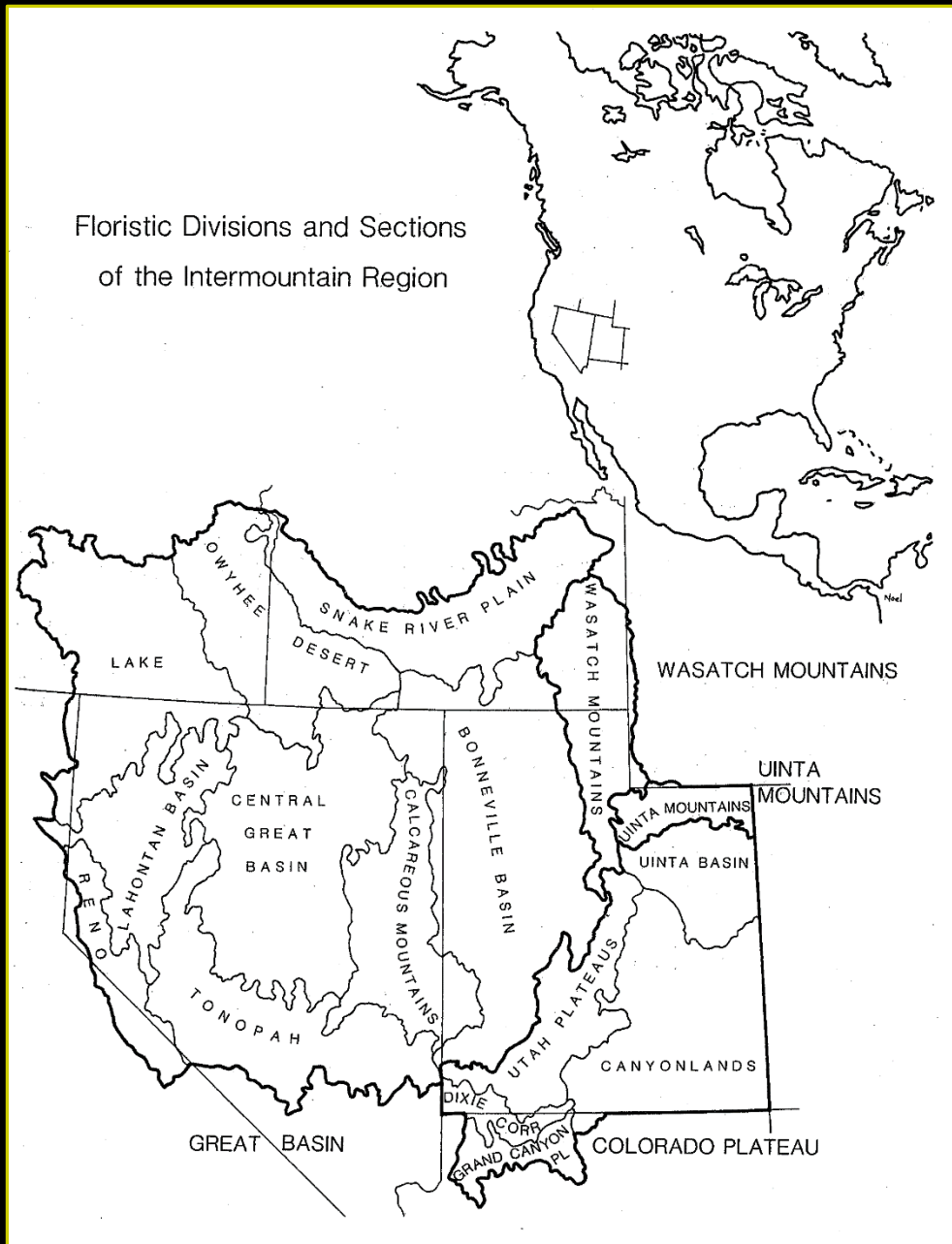
Group 6: Herbaceous Monocots and Dicots in Pistillate Condition, Producing Ovules within Ovaries; Staminate or Bisexual Flowers Absent

1. Pls fully aquatic, submersed, floating in water, or stranded on mud
2. Pls gen free-floating, the whole pl < 15 mm, often < 5 mm; lvs and sts not differentiated; roots 0 or 1—few, unbranched — pistil emerging from tiny flap of tissue **LEMNACEAE**
- 2' Pls rooted in bottom sediments or free-floating, gen >> 15 mm; lvs and sts clearly differentiated; roots often branched
3. Lvs alternate **CYMODOCEACEAE**
4. Lf tips shallowly 2-toothed; pls of inland saltwater habitats
- 4' Lf tips entire; pls of freshwater or marine habitats **POTAMOGETONACEAE (Ruppia)**
5. Frs borne in umbel-like clusters
- 5' Frs or fls borne in spikes or heads
6. Fls in dense, spheric heads, these solitary or in axillary or terminal clusters, not enclosed in lf sheaths; freshwater habitats **TYPHACEAE (Sparganium)**
- 6' Fls in axillary spikes, these gen enclosed and concealed in sheaths of subtending lvs; marine habitats **ZOSTERACEAE**
- 3' Lvs opposite or whorled or all basal
7. Lvs all basal; fls solitary in lf-axils; style very elongated, often > 5 cm **JUNCAGINACEAE (Lilaea)**
- 7' Lvs cauline; fls axillary or variously clustered; styles gen << 5 cm (exc in some Hydrocharitaceae)
8. Lf blades (at least those of submersed lvs) divided into linear lobes **CERATOPHYLLACEAE**
9. Blades of lvs repeatedly forked **HALORAGACEAE (Myriophyllum)**
- 9' Blades of lvs pinnately forked
- 8' Lf blades entire, toothed, or shallowly lobed
10. Petals and sepals both 3, evident; perianth and stigmas borne at water surface at end of long, tubular hypanthium; ovary inferior, sessile in lf axil **HYDROCHARITACEAE**
- 10' Petals and sepals both 0; stigmas submersed, borne at end of short styles; ovary or ovaries superior, sessile or short-stalked in lf axil
11. Pistil 1, compound, bearing 2–4 slender stigmas; lvs subtentire to finely or coarsely toothed **HYDROCHARITACEAE (Najas)**
- 11' Pistils 2–10, simple, each with a cup-like stigma; lvs entire **ZANNICHELLIACEAE**
- 1' Pls terrestrial or, if growing in wet places, rooted in place and extending well above water surface
12. Pls parasitic on sts of woody host pls
13. Fls of parasite borne directly on sts of host; remainder of parasite internal within tissues of host; sts and lvs not differentiated **RAFFLESIACEAE**
- 13' Fls borne on leafy branches of parasite; shoots of parasite external; lvs differentiated, though sometimes reduced to scales **VISACEAE**
- 12' Pls free-living
14. Lvs opposite or whorled, not all basal
15. Sts or lvs thick and fleshy; infls terminal spikes
16. Stipules present; stigma 1, head-like; ovary chambers 4; ovaries joining into a fleshy multiple fr; perianth 0 **BATACEAE**
- 16' Stipules 0; stigmas 2, linear; ovary chamber 1; ovaries maturing as utricles, sometimes surrounded by fleshy bracts and perianth elements **CHENOPODIACEAE**
- 15' Sts and lvs of normal texture, not thick and fleshy; infls various
17. Lvs palmately compound or simple and deeply lobed **CANNABACEAE**
- 17' Lvs simple, entire or toothed
18. Lvs whorled, sessile or nearly so; margin entire or minutely serrate; stinging hairs 0; ovary inferior, 2-lobed **RUBIACEAE**
- 18' Lvs opposite, conspicuously petioled; margin serrate, dentate, or crenate; stinging hairs present; ovary superior, unlobed **URTICACEAE**
- 14' Lvs alternate or all basal
19. Lvs stiff and sword-like, 0.5–1.5 m; infl a large panicle; perianth parts 6 **LILIACEAE (Nolina)**
- 19' Lvs not sword-like, often smaller; infls various; perianth parts mostly other than 6
20. Blades of lvs linear or narrowly lanceolate, simple and entire; veins parallel; lf bases sheathing st
21. Lvs all basal; fls solitary in lf axils; styles very elongated, often > 5 cm **JUNCAGINACEAE (Lilaea)**
- 21' Lvs basal and cauline or all cauline; fls in spikes or spikelets, these gen in secondary clusters; styles gen << 5 cm
22. St triangular; nodes not swollen; lf blades often channeled **CYPERACEAE**
- 22' St round; nodes gen swollen and knot-like; lf blades gen flat **POACEAE**
- 20' Blades of lvs variously shaped, sometimes toothed, lobed, or compound; veins mostly pinnate or palmate; lf bases often not sheathing sts — fls not in spikelets
23. Lvs all basal; fls with 3 petals and many free pistils **ALISMATACEAE**
- 23' At least some lvs cauline; fls not with both 3 petals and many free pistils
24. Pls vines **CANNABACEAE (Humulus)**
25. Tendrils 0; perianth not at all corolla-like; ovary superior **CUCURBITACEAE**
- 25' Tendrils present; perianth corolla-like; ovary inferior

Example of an indented key in

The Jepson Manual: Higher Plants of California

By
James C. Hickman



Example of a flora's geographic range, in

Intermountain Flora: Vascular
Plants of the Intermountain
West, U.S.A.

By
Noel H. Holmgren
Patricia K. Holmgren
Arthur Cronquist

An illustrated glossary provides pictures and definitions of botanical structures and terms, such as those in

Plant Identification and Terminology:
an Illustrated Glossary

by
James G. Harris
and
Melinda Woolf Harris

Farinose. Covered with a mealy, powdery substance. Figure 467.

Fasciated. Compressed into a bundle or band; grown closely together; with the stems malformed and flattened as if several separate stems had been fused together. Figure 468.

Fascicle. A tight bundle or cluster. Figure 469.

Fasciculate. Arranged in fascicles. Figure 469.

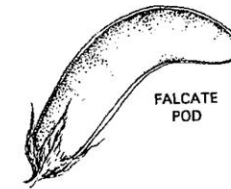


Figure 464

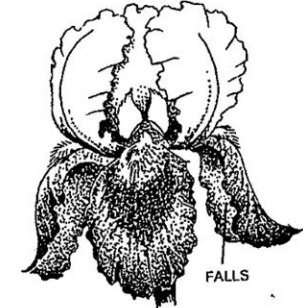


Figure 465

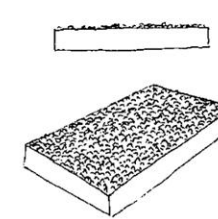


Figure 466

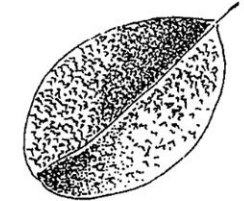


Figure 467

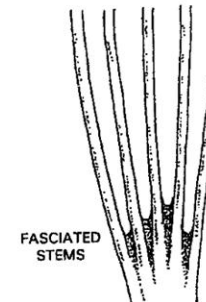


Figure 468

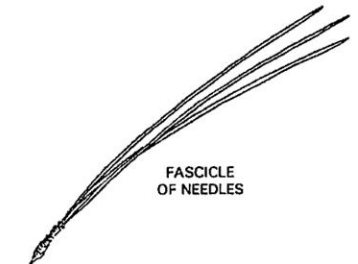


Figure 469

Questions ? Comments?

Contact us:

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